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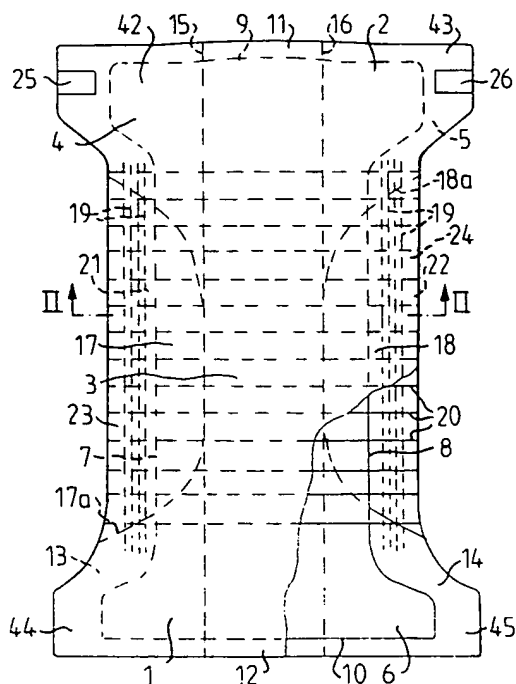
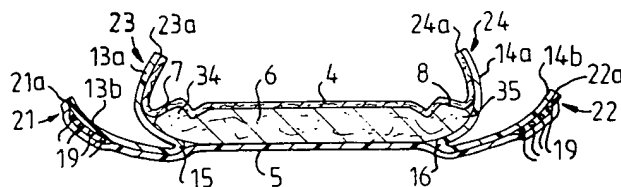
(56) Documents cited

**None**

(58) Field of search

**UK CL (Edition K) A3V****INT CL<sup>5</sup> A61F 13/15****(54) Nappy or incontinence pad**

(57) A diaper or incontinence guard includes, at least in the crotch-part (3), barrier flaps (23, 24) which extend along an absorbent pad (6) and which are separate from side-flaps (21, 22). Transverse elastic elements (20) extend transversely across the absorbent pad (6) and are arranged so that the spring force exerted by the elastic elements (20) will essentially only act on the absorbent pad (6) and the barrier flaps (23, 24) upon the transition from their stretched (Fig. 1) to their contracted state (Fig. 3).

**FIG. 1****FIG. 3****GB 2 262 873 A**



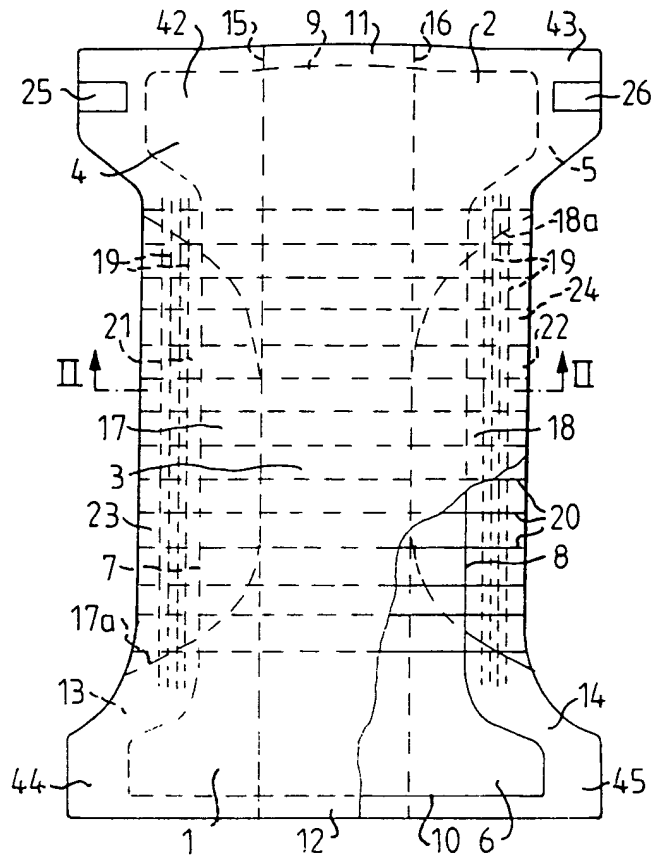


FIG. 1

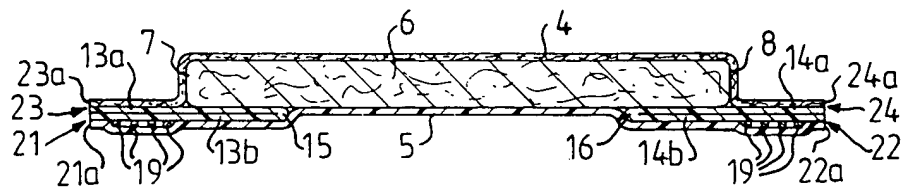


FIG. 2

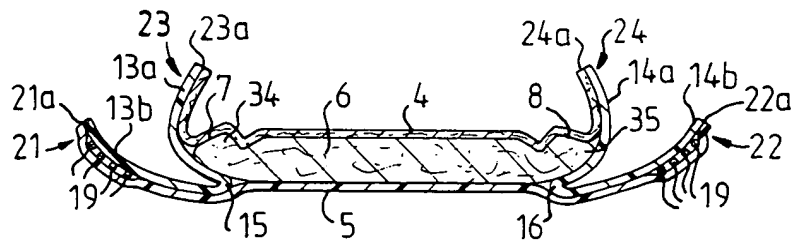


FIG. 3

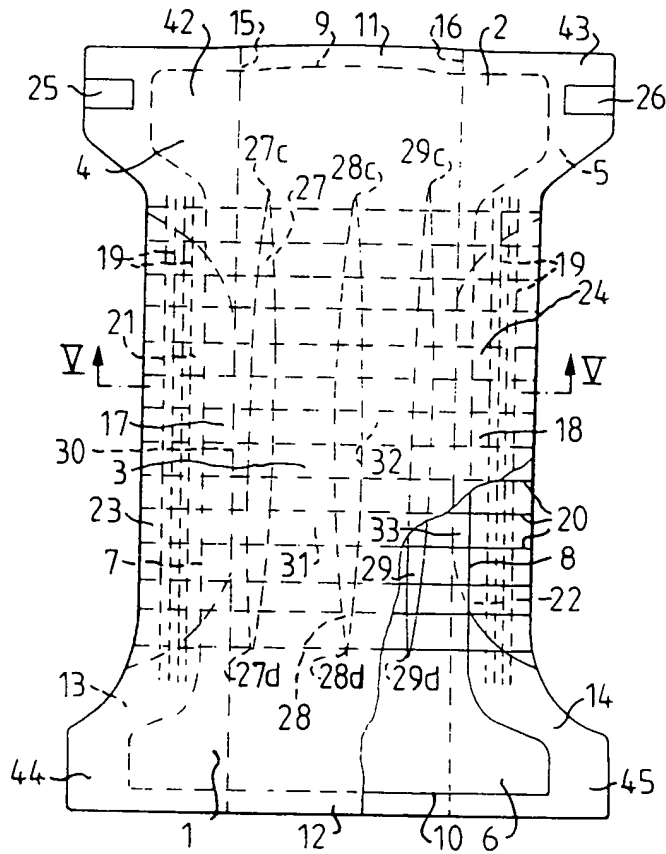
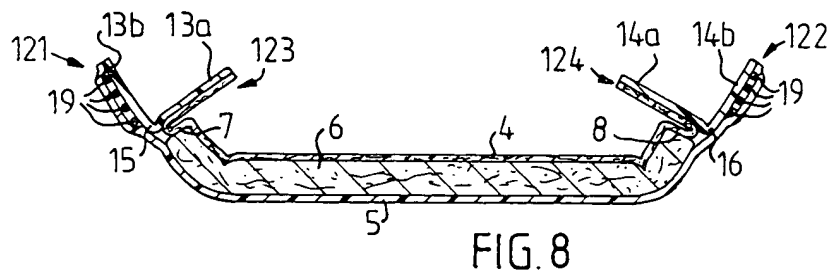
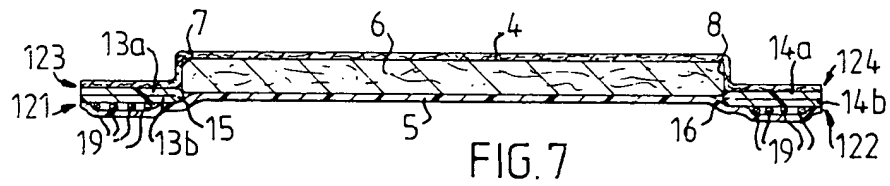
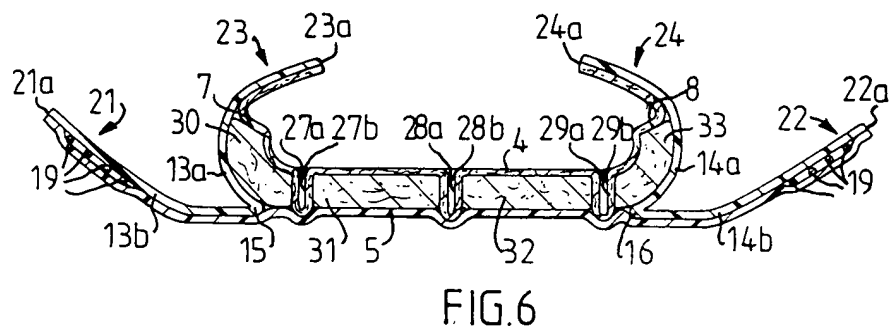
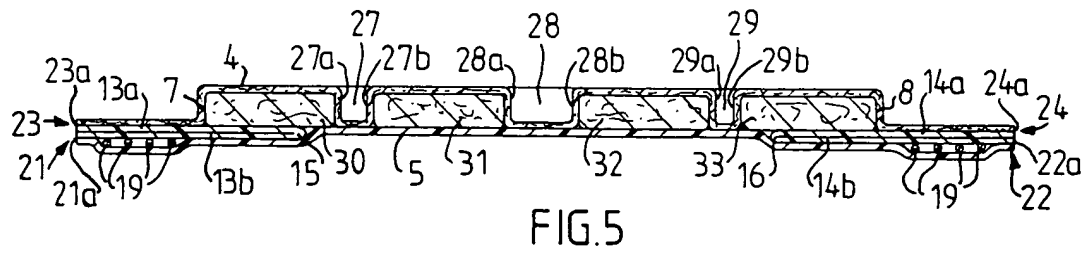


FIG. 4



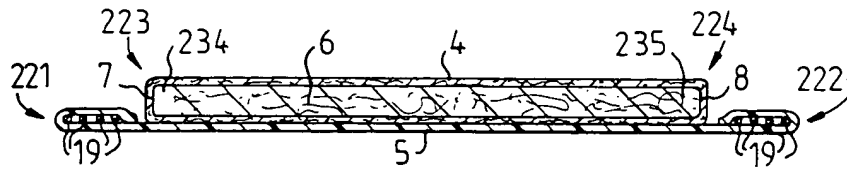


FIG. 9

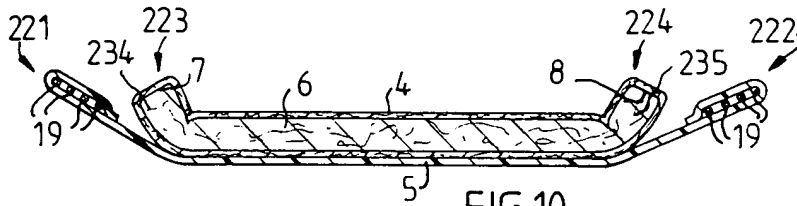


FIG. 10

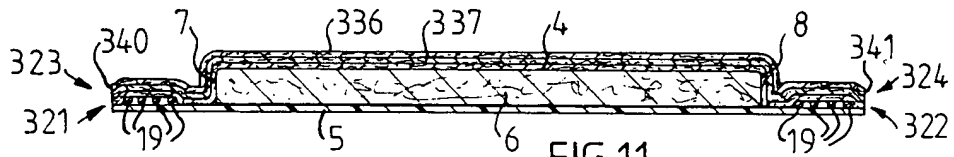


FIG. 11

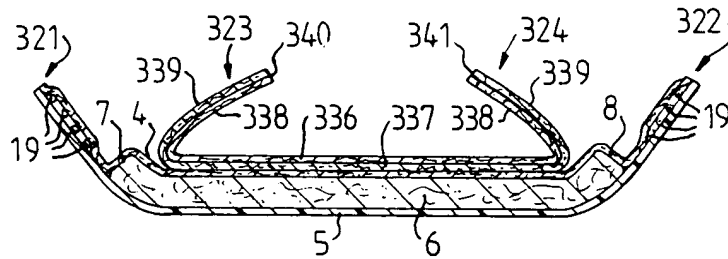


FIG. 12

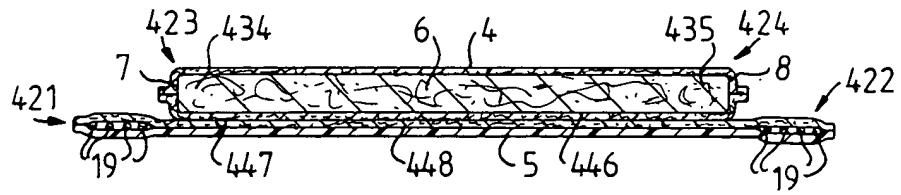


FIG.13

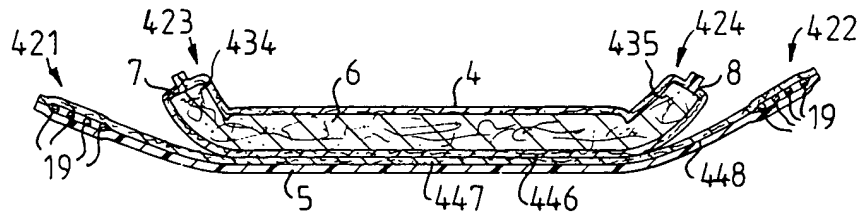


FIG.14



An Absorbent Article

5 The present invention relates to an absorbent article,  
such as a diaper, an incontinence guard, or like arti-  
cle, comprising a front end-part, a rear end-part, an  
intermediate crotch-part which, in use, is intended to  
be placed between the wearer's thighs, an absorbent pad,  
flexible side-flaps which extend laterally beyond the  
absorbent pad on both sides thereof at least within the  
10 crotch-part of the article, longitudinally extending  
elastic elements which extend along the side-edge of  
respective side-flaps and which function as leg elastic-  
ation when the article is worn, and transversal elastic  
elements which are mounted in an extended or stretched  
15 state at least in the crotch-part, inwardly of an arti-  
cle casing layer on that side of the absorbent pad which  
faces towards the wearer in use.

20 One problem associated with earlier known articles of  
this kind is one of causing the article to fit sealingly  
around the wearer, so as to prevent body liquid from  
running from the article and wetting and soiling the  
wearer's clothes. It is extremely difficult to adapt a  
relatively rigid and flat absorbent pad to the curved  
25 contours of the wearer's body. It has been found partic-  
ularly difficult to obtain a well-configured crotch-  
part, since this particular part of the article shall be  
sufficiently narrow and small to obtain room in the  
confined space between the wearer's thighs, and, at the  
30 same time, be wide and large enough to accommodate the  
body liquid discharged by the wearer, without this  
liquid reaching the side-edges of the article or leaking  
from the article in some other way and therewith cause  
discomfort to the wearer.

35

At present, it is standard practice to provide dispos-

able diapers with pre-stretched elastic bands, elastic threads or the like, which are mounted in pliable or flexible side-flaps outwardly of the side-edges of the absorbent pad and which are intended to ensure that the side-flaps will lie sealingly against the wearer's thighs, thereby to reduce the risk of leakage. Although these elastic elements function in the manner intended to some extent, they do not, however, assist to any great extent in imparting a desired shape to the absorbent pad in the crotch-part of the article or in preventing liquid from running out or being pressed from a deformed absorbent pad. As a result, the liquid is liable to collect between the absorbent pad and the elastic elements, causing skin irritation. Furthermore, it is not certain that the elastic elements will fulfil the purpose of causing the side-flaps to lie sealingly against the wearer's skin, and gaps are liable to form between the side-flaps and the wearer's skin through which liquid and excrement can escape from the article, despite the provision of such elastication.

Swedish Patent Specification SE 7900938-7 teaches a diaper which is provided with transverse elastic elements instead of with longitudinally extending elements. Because the elastic elements are mounted in a stretched or extended state, the resultant diaper is drawn together in the direction of its transverse axis, thereby imparting a basin-like shape to the crotch-part of the diaper. The absorbent pad is adapted in this way to the confined space between the wearer's thighs, while at the same time, bringing the side-edges of the absorbent pad into sealing abutment with the wearer. Despite this advantageous solution, however, there is still a need for improved solutions to the problem of preventing body fluid from leaking from the article.

Swedish Patent Specification SE 8406071-4 describes a diaper which includes a network of longitudinally and transversely extending elastic elements. The longitudinally elastic elements are mounted in the side-flaps on  
5 respective sides of the absorbent pad, and the transverse elements extend at least over the crotch region of the diaper. The elastic network extends beyond the absorbent pad, at least laterally of the article, and by deflecting individual elements with the aid of crossing  
10 elements is given an elastic curvature suitable for adapting the pad to the wearer's body.

It is also known, for instance from EP 0 115 286, to place several elastic elements, such as elastic threads,  
15 in mutually adjacent mutually spaced relationship along the side-flaps. The intention with this arrangement is to distribute the total pressure exerted by the longitudinally extending elastication on the wearer's skin over a wide surface area, so as to achieve broad and soft  
20 abutment. When transversely extending elastic elements are mounted in a flexible side-flap which includes longitudinally extending elastic elements, as described in EP 0 115 286, the transverse elastic elements will draw the flexible side-flaps towards the side-edges of  
25 the absorbent pad as said elements contract from their original stretched state. At the same time, the longitudinal elastic elements in the side-flaps are forced in towards said side edges and also towards each other. As a result, the outer edges of the side-flaps crease and  
30 become sharp and uncomfortable to the wearer and may chafe the wearer's skin under unfavourable circumstances. Thus, in the worst case, the transverse elastic elements may give the reverse effect, i.e. result in narrow and hard abutment with the skin.

35 It is also known, for instance from EP 0 219 326, to

provide barrier flaps along the side-edges of a diaper. These flaps have a proximal and a distal edge and include means for distancing the distal edge from the liquid-permeable casing layer of the diaper, in an attempt to create a barrier against the leakage of excrement at the side edges of the diaper. Elastic elements mounted within a fold located at the distal edge of the barrier flap and extending in the longitudinal direction of the diaper are mentioned by way of an example of such elastication. A barrier flap which is raised as a result of the effect of elastic elements which act essentially in the longitudinal direction of the flap, however, has poorer resistance to forces which act essentially at right angles to the longitudinal axis of the flap. When the barrier flap is also comprised of a flexible material layer, there is a greater risk that the flap will curve laterally in an uncontrolled manner under the influence of the lateral forces that occur when the diaper is worn, whereby the barrier flap will no longer constitute any form of barrier against leakage at the side-edges of the diaper. It is also likely that the longitudinally extending elastic element will be excessively loose and have no effect when the diaper is curved or bent longitudinally, for instance as the diaper is fitted to the wearer or also while the diaper is in use. Neither can the absorbent pad be curved readily in a lateral direction, since the elastic elements are active in a direction which is unfavourable in this respect.

The present invention, however, provides an article of the kind defined in the introduction which avoids the problems associated with earlier known articles of this kind, by ensuring that leakage will not occur and by eliminating the negative effect of the elastic elements on one another.

An absorbent article constructed in accordance with the present invention is mainly characterized in that the article includes, at least in the crotch-part of the article, barrier flaps which extend along the absorbent pad in spaced relationship with the side-flaps; and in that the transverse elastic elements extending across the absorbent pad are disposed so that upon transition from an extended to a contracted state, the spring force exerted by said elements will act essentially solely on the absorbent pad and the barrier flaps.

This separation of the longitudinally extending elastic elements, i.e. the leg elastic, from the transversely extending elastic elements results in a number of advantages.

For instance, the leg elastication is able to function uninfluenced by lateral forces generated by the transverse elastic elements. This will ensure that the leg elastication will retain its position in the flexible side-flaps without being drawn in towards the absorbent pad. Furthermore, when the leg elastication comprises a plurality of elastic elements, the arrangement will also prevent these elastic elements from being drawn towards one another. This enables the soft skin abutment afforded by such leg elastication to be utilized to the full.

The transverse elastic elements will also curve the absorbent pad laterally and impart to the pad a basin-like configuration, in the same manner as that earlier described with respect to an absorbent pad according to Swedish Patent Specification SE 7900938-7. However, the flexible side-flaps will not be affected by the elastic force exerted by the transverse elastication and will not therefore accompany this basin-like curving of the absorbent pad, and the side-flaps with their

longitudinally extending elastic elements will form elastic sealing flaps which are located externally of the absorbent pad and which seal conformingly against the wearer's thighs.

5

As opposed to earlier known diapers in which barrier flaps are disposed along the side-edges thereof, transverse elastic elements are used to raise the barrier flaps, so as to prevent fluid leaking from the side-edges. This enhances the stability of the raised barrier flaps and the barrier flaps have a still greater bending resistance against undesirable deformation than when the side parts of the absorbent pad are not included in the barrier flaps.

15

According to one advantageous embodiment of the invention, the transverse elastic elements are mounted on a liquid-permeable casing layer on one side of the absorbent pad, and the longitudinally extending elastic elements are mounted on a liquid-impermeable casing layer on the other side of the pad. Parts of the liquid-impermeable layer extend laterally beyond the side-edges of the pad. Parts of the liquid-permeable layer also extend laterally beyond the side-edges of the absorbent pad. A doubled or single-folded tape is arranged between said liquid-permeable layer parts and said liquid-impermeable layer. The tape is folded double in the direction of its longitudinal axis, so as to present an upper tape-layer and a lower tape-layer, which extend generally in the same direction from a common, fold-edge of the tape. The upper tape-layer is joined to the liquid-permeable layer and together therewith forms barrier flaps and, correspondingly, the lower tape-layer is joined to the liquid-impermeable layer and together therewith forms flexible side-flaps. The folded edge of the tape extends generally in the longitudinal direction

35

of the article and is placed inwardly of the respective free side-edges of the two tape-layers when seen laterally. The side surfaces of the upper and the lower tape-layers are mutually joined within the front and the rear end-parts of the diaper, although the two tape-layers are free from one another within at least one region within the crotch-part along the side-edges of the absorbent pad, with the exception of along the folded edge of the tape, of course. When the transverse elastic elements contract from their extended state, the tape-layers are able to move apart, and therewith also the longitudinally and transversely extending elastic elements, as the barrier flaps are lifted at the same time to form barriers along the side-edges of the absorbent pad.

In the case of one particularly advantageous embodiment, the transverse or lateral extension of the single-folded tape is such that the tape will extend slightly in beneath the absorbent pad, i.e. between the pad and the liquid-impermeable layer. The flexible side-flaps therewith extend slightly inwardly of the side-edges of the absorbent pad and a part that extends along the side-edges of the pad is also separated from the side-flaps and included in the barrier flaps, when the pad and the liquid-permeable casing layer are curved by the transverse elastic elements.

Alternatively, the single fold tape may be positioned so that it extends slightly in over the absorbent pad, i.e. between the pad and the liquid-permeable layer, or the tape may be positioned solely between those parts of the liquid-permeable and liquid-impermeable layers which extend beyond the side-edges of the pad.

To facilitate curving and shaping of the absorbent pad,

the pad may advantageously be constructed in accordance with an absorbent pad of the kind described in Swedish Patent Specification SE 8904318-6. A pad of this kind is divided into separate parts which extend in the direction of the longitudinal axis of the article and which are mutually separated laterally in the crotch-part of the article by means of intermediate and mutually joined parts of the two casing layers. Transverse elastic elements are mounted within the region of the separate parts of the absorbent pad and function to move the edges of adjoining separate parts into abutment with one another as the intermediate parts of the mutually connected casing layers are pulled together.

Instead of positioning a separate doubled-over tape between the casing layers, either one or the other of said casing layers, or both of said layers, may be used to form a single-folded part between the liquid-permeable and the liquid-impermeable layer, principally in the same manner as that earlier described. When only one of said casing layers is folded to form said folded part, the lateral extension of said one casing layer prior to forming the folded or doubled part will suitably be greater than the lateral extension of the non-folded casing layer, in order to allow for the extra material required to produce the fold. When both casing layers are used to this end, however, both casing layers may have mutually the same lateral extension prior to creating the single-fold part, since equal amounts of material will preferably be used in each casing layer to form said folded part. It is essential in all cases that the longitudinally extending elements and the transversely extending elastic elements are separated from one another and that the barrier flaps are able to rise from their horizontal, extended state.

It is also possible to place between the casing layers two separate layers or sheets which are mutually joined along one longitudinally extending edge thereof, thereby to obtain a tape which includes two superimposed layers, similar to the aforescribed single-folded or doubled tape and having the same effect as said tape.

An inventive absorbent article will now be described in more detail with reference to an exemplifying embodiment thereof and also with reference to the accompanying drawings.

Figure 1 of the accompanying drawings is a view from above of a disposable diaper according to a first embodiment of the invention, seen from the side of the diaper which is intended to face the wearer in use and with the elastic elements shown in a stretched state.

Figure 2 is a sectional view taken on the line II-II in Figure 1, with the elastic elements still in a stretched state.

Figure 3 is a sectional view taken on the line II-II in Figure 1, with the elastic elements contracted from their stretched state.

Figure 4 is a view from above of a disposable diaper according to a second embodiment of the invention, seen from the side of the diaper which is intended to face the wearer in use and with the elastic elements in a stretched state.

Figure 5 is a sectional view taken on the line V-V in Figure 4, with the elastic elements still in a stretched state.

Figure 6 is a sectional view taken on the line V-V in Figure 4, with the elastic elements contracted from their stretched state.

5      Figure 7 is a sectional view similar to the view of Figure 2 and illustrates a third embodiment of the inventive disposable diaper, with the elastic elements shown in a stretched state.

10     Figure 8 is a sectional view of the diaper of Figure 7 and shows the elastic elements contracted from their stretched state.

15     Figure 9 is a sectional view, similar to Figure 2, of a fourth embodiment of the inventive disposable diaper and shows the elastic elements in a stretched state.

Figure 10 shows the elastic elements of the Figure 9 illustration in a contracted state.

20     Figure 11 is a sectional view, similar to Figure 2, of a fifth embodiment of the inventive disposable diaper and shows the elastic elements in a stretched state.

25     Figure 12 illustrates the elastic elements of the Figure 11 illustration in a contracted state.

30     Figure 13 is a sectional view, similar to Figure 2, of a sixth embodiment of the inventive disposable diaper, and shows the elastic elements in a stretched state.

Figure 14 illustrates the elastic elements of the Figure 13 illustration in a contracted state.

35     The diaper illustrated in Figures 1-3 includes a front and a rear end-part 1, 2 and an intermediate crotch-part

3 which is intended to be located between the wearer's thighs in use. The diaper further includes a liquid-permeable casing layer 4 which is intended to face the wearer in use, a liquid-impermeable casing layer 5 which is intended to lie distal from the wearer in use, and an absorbent pad 6 which is sandwiched between the casing layers 4, 5. Part of the liquid-permeable layer 4 has not been shown in Figure 1, so that those diaper elements which lie beneath said layer can be seen.

The liquid-permeable casing layer 4 may, for instance, comprise a non-woven fabric or a perforated plastic material. The liquid-impermeable casing layer 5 is comprised, for instance, of a plastic material, such as polyethylene, although it may also have the form of a liquid-tight layer which is covered with a layer of non-woven material or a layer of loose fibres on that side of the liquid-tight layer which is intended to lie distal from the wearer in use. The absorbent pad 6 is preferably composed of cellulose fluff fibres. The absorbent pad 6, however, may also include other material or materials, both absorbent and non-absorbent material. For instance, the absorbent pad may include polymers which are capable of absorbing liquid in quantities many times their own weight, i.e. so-called superabsorbents. These superabsorbents may be mixed with the cellulose fibres or may be disposed in layers within or on top of the absorbent pad 6. The superabsorbents may have a number of different forms, for instance a powder or fibre form. The absorbent pad 6 may also include more than one layer, and the layers may be of similar or dissimilar construction with regard to material, size, bulk and surface weight. For the sake of simplicity, the absorbent pad 6 of this embodiment of the invention and also of the following embodiments of the invention is shown in the form of a single layer, as will best be

seen from Figure 2.

The illustrated absorbent pad 6 has the shape of an I, although other shapes, such as a T-shape or a rectangular shape, are also conceivable. The two casing layers 4, 5 have generally the same shape as the absorbent pad 6, but extend both laterally and longitudinally somewhat beyond the side-edges and end-edges 7-10 of the absorbent pad. The casing layers 4, 5 are joined together outside the end-edges 9, 10 of the absorbent pad and there form end-flaps 11, 12. Two longitudinally extending and doubled, or single-folded, tapes 13, 14 are placed along respective side-edges 7, 8 of the absorbent pad, between the casing layers 4, 5. The folded tapes 13, 14 present an upper tape-layer 13a, 14a and a lower tape-layer 13b, 14b. These tape layers are mutually joined along a fold-edge 15, 16 which is positioned laterally somewhat inwardly of the side-edges 7, 8 of the pad, between the pad 6 and the liquid-impermeable casing layer 5. The upper tape-layers 13a, 14a are joined to the pad 6 and to the liquid-permeable casing layer 4 outwardly of the side-edges 7, 8 of said pad. The lower tape-layers 13b, 14b are joined to the liquid-impermeable casing layer 5. Regions 17, 18 of the crotch part 3 of the diaper extend along respective side-edges of the absorbent pad, and the upper and lower tape-layers 13a, 14a; 13b, 14b are separable in these regions of the diaper. On the other hand, the upper and lower tape-layers 13a, 14a; 13b, 14b which extend over remaining parts of the diaper are joined together. In the Figure 1 illustration, these parts of the diaper are generally comprised of the four corner parts 42-45 of the diaper. Together with the liquid-impermeable casing layer 5, the lower tape-layers 13b, 14b form flexible side-flaps 21, 22 within said regions 17, 18 of the crotch-part 3.

Correspondingly, the upper tape-layers 13a, 14a form together with parts 34, 35 of the absorbent pad 6 and the liquid-permeable casing layer 4 barrier flaps 23, 24 within said regions 17, 18 of the crotch-part 3. The  
5 tapes 13, 14 may consist of a liquid-permeable or a liquid-impermeable material. The latter material is preferred from the leakage aspect, since the barrier flaps 23, 24 will therewith be liquid-tight. However, the tapes are suitably air-permeable.

10 The illustrated diaper also includes elastic elements 19 which extend along the free side-edges 21a, 22a of respective side-flaps 21, 22, in the longitudinal direction of the diaper. These longitudinally extending  
15 elastic elements function as leg elastic and, in the Figure 1 embodiment, extend along the full length of the flexible side-flaps 21, 22. The longitudinally extending elastic elements 15 are preferably inactive in the two end-parts 1, 2. Transverse elastic elements 20 are  
20 mounted within the crotch-part 3, between the liquid-permeable casing layer 4 and the absorbent pad 6, and are fastened to the liquid-permeable casing layer 4. The elastic elements 20 extend from the free side-edge 23a of one barrier flap 23 to the free side-edge 24a of the  
25 other barrier flap 24.

The elastic elements 19, 20 may, for instance, have the form of elastic bands or elastic threads which are mounted on the diaper in a pre-stretched state. The  
30 number of elastic threads used may be greater or fewer than what is shown in Figures 1 and 2. Naturally, other types of elastic elements may be used, for instance elastic film or material which loses its elastic effect when stretched but which returns to its original length  
35 and repossesses its elasticity when treated with heat.

Figure 3 illustrates how the diaper curves under the influence of the transverse elastic elements 20, so that the flexible side-flaps 21, 22 are distanced from the barrier flaps 23, 24. This allows the longitudinally  
5 extending elastic elements 19 to draw together the flexible side-flaps 21, 22 without being negatively influenced by the transverse elastic elements 20.

The various layers in the diaper can be joined together  
10 with the aid of conventional techniques, such as with the aid of an adhesive or ultrasonic welding technique. The diaper illustrated in Figure 1 is also provided with fastener tabs 25, 26 of a known kind, which secure the diaper to the wearer. The fastener tabs 25, 26 are  
15 mounted on the rear end-part 2 of the diaper, adjacent the side-edges thereof, although their exact position has no decisive significance to the present invention.

Figures 4-6 illustrate a second embodiment of an inventive diaper. Those structural elements which are also found in the Figures 1-3 embodiment have been identified in Figures 4-6 with corresponding numeral signs. The diaper is identical to the diaper illustrated in Figures 1-3, with the exception that within the crotch-part 3  
25 the absorbent pad 6 is provided with three elongated and narrow penetrating holes 27-29 which extend in the direction of the longitudinal axis of the diaper. The liquid-permeable casing layer 4 is joined to the liquid-impermeable casing layer 5 at each of the holes 27-29,  
30 as will best be seen from Figure 5. Each of the holes 27-29 has two longitudinal side-walls 27a-b, 28a-b, 29a-b, and two end-parts 27c-d, 28c-d, 29c-d, where respective opposing side-walls 27a-b, 28a-b, 29a-b, meet. The side-walls 27a-b, 28a-b, 29a-b are spaced  
35 furthest apart approximately centrally between the end-parts 27c-d, 28c-d, 29c-d of the holes, and successively

approach one another to meet finally at said end-parts  
 27c-d, 28c-d, 29c-d. When the diaper is in its extended  
 state, as shown in Figure 5, the side-walls 27a-b,  
 28a-b, 29a-b of the holes are spaced apart, but approach  
 5 opposing side-walls when the transverse elastic elements  
 20 are permitted to contract, as shown in Figure 6. The  
 holes 27-29 divide the absorbent pad, at least within  
 the crotch-part 3, into four delimited sections 30-33,  
 each of which is strengthened by joining the casing  
 10 layers 4, 5 together through respective holes 27-29  
 between the sections 30-33. This reduces the strain on  
 the absorbent pad 6 as the pad is curved and deformed  
 laterally in use and also enables the formation of  
 undesirable cracks in the absorbent pad to be avoided.  
 15 In addition, the absorbent pad is curved appropriately  
 in a predetermined manner, therewith imparting a three-  
 dimensional shape to the diaper and also good conformity  
 to the body contours of the wearer.

20 Figure 7-14 are cross-sectional views of further embodi-  
 ments of the inventive diaper. The views are taken on  
 sectional planes corresponding to the section plane of  
 the Figure 1 embodiment, although the illustrated diaper  
 and absorbent pad could just as well correspond to the  
 25 diaper and absorbent pad of the Figure 4 embodiment.  
 Those structural elements of the diapers illustrated in  
 Figures 7-14 which correspond to the structural elements  
 of the diaper illustrated in Figure 1 have been identi-  
 fied by corresponding numeral signs.

30 The diaper illustrated in Figures 7-8 is identical with  
 the diaper illustrated in Figures 1-3, but has flexible  
 side-flaps 121, 122 and barrier flaps 123, 124 which  
 extend laterally solely from the side-edges 7, 8 of the  
 35 absorbent pad to the side-edges of the diaper. Thus, the  
 flaps do not extend inwardly of the side-edges 7, 8 of

the absorbent pad and the folded edges 15, 16 of the doubled tapes are placed adjacent the side-edges 7, 8 of the absorbent pad. In this case, this lateral extension of the side-flaps 121, 122 and the barrier flaps 123, 124 is smaller than the lateral extension of the corresponding flaps shown in Figures 1-3. However, the longitudinally extending elastic elements 19 separate from the transverse elastic elements sufficiently for the former to remain unaffected by the latter.

Figures 9-10 illustrate a diaper whose absorbent body 6 is fully enclosed in a liquid-permeable casing layer 4. A liquid-impermeable casing layer 5 extends slightly beyond the side-edges 7, 8 of the absorbent pad and is there folded back over itself, in towards said side-edges 7, 8. In the case of this embodiment, it is particularly preferred that the liquid-impermeable casing layer includes a skin-friendly material on the outer surface of the layer which is distal from the wearer in use, since those parts of the casing layer which are folded back over themselves will lie against the skin of the wearer in use.

The longitudinally extending elastic elements 19 are mounted within the fold formed by the liquid-impermeable casing layer 5. Although not shown, transverse elastic elements are mounted in the same manner as that described with reference to Figure 1. Seen laterally, the liquid-permeable and liquid-impermeable casing layers 4, 5 are joined together from the centre of the absorbent pad slightly inwards of the pad side-edges 7, 8. The casing layers 4, 5 up to the side-edges 7, 8 are not mutually joined, and, instead, the liquid-impermeable casing layer 5 forms flexible side-flaps 221, 222 in which the longitudinally extending elastic elements 19 can act without being influenced by the transverse

elastic elements, at the same time as these elements bend up the free-parts 234, 235 of the absorbent pad 6 inwardly of said side-edges 7, 8, said free-parts 234, 235 forming barrier flaps 223, 224. The side-flaps 221, 222 and the barrier flaps 223, 224 extend in the longitudinal direction of the diaper, at least over parts of the crotch-region of said diaper, as will best be seen in connection with Figure 1.

In the case of the diaper illustrated in Figures 11-12, the absorbent pad 6 is enclosed in a casing which is comprised of a liquid-permeable and a liquid-impermeable layer 4, 5, both of which extend at least laterally beyond respective side-edges 7, 8 of the absorbent pad, where they are mutually joined to form flexible side-flaps 321, 322. Longitudinally extending elastic elements 19 are mounted in the side-flaps 321, 322, between the casing layers 4, 5. Two additional superimposed liquid-permeable casing layers 336, 337 are mounted on that side of the liquid-permeable casing layer 4 which is distal from the absorbent pad 6.

Although not shown, transversal elastic elements are mounted between the two additional casing layers 336, 337 in generally the same manner as that described with reference to Figure 1. The two additional casing layers 336, 337 may, for instance, comprise layers of non-woven fabric. The double, additional casing layers 336, 337 present to the liquid-impermeable casing layer 4 unattached parts 338, 339 which extend from the side-edges 340, 341 of the additional casing layers to a point slightly inwardly of the side-edges 7, 8 of the absorbent pad. When the transverse elastic elements are permitted to contract, see Figure 12, these unattached parts 338, 339 form barrier flaps 323, 324 which are separated from the flexible side-flaps 321, 322.

Figures 13-14 illustrate a diaper having an absorbent pad 6 which is enclosed between two casing layers 4, 446, of which the first casing layer 4 is permeable to liquid and is intended to face towards the wearer in use, whereas the second casing layer 446 is either permeable to liquid at least over parts of its surface or is liquid-impermeable. The two casing layers 4, 446 extend laterally beyond the side-edges 7, 8 of the absorbent pad, where they are joined together. The second casing layer 446 is mounted on a separate flexible, liquid-tight outer casing 448 which includes a laminate consisting of an inner and an outer casing layer 447, 5, of which the inner casing layer 447 lies against the second casing layer 446 of the absorbent pad and is made of a skin-friendly material, for instance non-woven fabric, and the outer casing layer 5 is liquid-impermeable and is made, for instance, of a polyethylene material.

The flexible outer casing 448 extends laterally beyond the side-edges 7, 8 of the absorbent pad and there forms flexible side-flaps 421, 422. The side-flaps 421, 422 also extend slightly beyond the pad casing layers 4, 446. Alternatively, the lateral extension of the side-flaps 421, 422 may be equal to or greater than the lateral extension of the pad casing layers 4, 446. Longitudinally extending elastic elements 19 are mounted in the side-flaps, between the inner and the outer casing layers 447, 5. Although not shown, transversely elastic elements are mounted in the same way as that described with reference to Figure 1. The inner casing layer 447 of the flexible outer casing 448 is joined to the second casing layer 446 of the absorbent pad, from the centre of the pad, as seen laterally, to a point slightly inwardly of the side-edges 7, 8 of the pad, while the aforesaid casing layers 447, 446 extend freely

from one another up to the side-edges 7, 8. Thus, when the transverse elastic elements contract from their stretched state, see Figure 14, the side-parts 434, 435 of the absorbent pad 6 curve upwards, wherewith barrier flaps 423, 424 are obtained in a manner similar to the other illustrated embodiments. Thus, the transverse elastic elements are distanced from the longitudinally extending elastic elements in the flexible side-flaps 421, 422 also in this case.

It will be understood that other variations are conceivable within the scope of the Claims and the invention shall not therefore be considered limited to the illustrated exemplifying embodiments thereof, but only by the scope of the following Claims.

Although the invention has been described in the exemplifying embodiments with reference to disposable diapers, it will be understood that the invention can be applied equally as well to other absorbent articles, for instance articles such as incontinence guards, absorbent trouser diapers or diapers that are intended for repeated use.

Claims

1. An absorbent article, such as a diaper, an incontinence guard or like article, comprising a front and a rear end-part (1, 2), an intermediate crotch-part (3) which is intended to be positioned between the thighs of the wearer in use, an absorbent pad (6), flexible side-flaps (21, 22) which extend laterally beyond the absorbent pad (6) on both sides of the same, at least within the crotch-part (3), longitudinally extending elastic elements (19) which are disposed along the free side-edge (21a, 22a) of said side-flaps (21, 22), said elastic elements (19) functioning as leg elastication when the article is worn, and transverse elastic elements (20) which are mounted, in a stretched state, at least in the crotch-part (3) inwardly of an article casing layer (4) on that side of the absorbent pad which is intended to face the wearer in use, c h a r a c - t e r i z e d in that the article includes, at least in said crotch-part, barrier flaps (23, 24) which extend along the absorbent pad and which are separate from the side-flaps (21, 22); and in that the transverse elastic elements (20) extend transversely across the absorbent pad and are arranged so that the spring force exerted by said elastic elements (20) will essentially only influence the absorbent pad and the barrier flaps (23, 24) upon the transition from their stretched to their contracted state.

2. An absorbent article according to Claim 1, c h a r a c t e r i z e d in that the flexible side-flaps (21, 22) include parts of a liquid-impermeable casing layer (5) on that side of the absorbent body which is intended to lie distal from the wearer in use; and in that the barrier flaps (23, 24) include parts of a liquid-permeable casing layer (4) which is mounted on

the opposite side of the absorbent pad (6).

3. An absorbent article according to Claim 2,  
c h a r a c t e r i z e d in that the barrier flaps  
5 (23, 24) also include side-parts (34, 35) of the absor-  
bent pad (6), along the side-edges (7, 8) of said pad.

4. An absorbent article according to Claim 2 or Claim  
3, c h a r a c t e r i z e d in that a tape (13, 14)  
10 having an upper (13a, 14a) and a lower tape-layer (13b,  
14b) is mounted along respective side-edges (7, 8) of  
the absorbent pad, between the casing layers (4, 5),  
said two upper and lower tape-layers (13a, 14a; 13b,  
14b) being joined at and extending substantially in the  
15 same direction from a common longitudinally extending  
edge (15, 16) of said tape (13, 14) in the extended  
state of the article; in that the flexible side-flaps  
(21, 22) include the lower tape-layer (13b, 14b); in  
that the barrier flaps (23, 24) include the upper tape-  
20 layer (13a, 14a); and in that the crotch-part (3) has at  
least one region (17, 18) along respective side-edges  
(7, 8) of the absorbent pad in which the upper and the  
lower tape-layers (13a, 14a; 13b, 14b) can be distanced  
from one another over substantially the whole of their  
25 mutually facing side surfaces, thereby enabling the  
side-flaps (21, 22) and the barrier flaps (23, 24), and  
therewith also the longitudinally extending and trans-  
versely extending elastic elements (19, 20) to move  
apart as the elastic elements (19, 20) contract from  
30 their extended states.

5. An absorbent article according to Claim 4,  
c h a r a c t e r i z e d in that the longitudinally  
extending edge (15, 16) of the tape (13, 14) from which  
35 the upper and the lower tape-layers (13a, 14a; 13b, 14b)  
extend is positioned inwardly of respective side-edges

(7, 8) of the absorbent pad; and in that the tape layers (13a, 14a; 13b, 14b) extend from said side-edges (7, 8) in directions out towards the side-edges of the article.

5 6. An absorbent article according to Claim 4 or Claim 5, c h a r a c t e r i z e d in that the tape (13, 14) is folded double and presents a folded longitudinally extending edge (15, 16); and in that the longitudinally  
10 formed by the folded edge (15, 16) of the tape (13, 14); and in that the upper and the lower tape layers (13a, 14a; 13b, 14b) are formed by two over-folded parts of the tape (13, 14), these over-folded parts of the tape (13, 14) being joined together at the folded tape edge  
15 (15, 16).

7. An absorbent article according to Claim 4 or Claim 5, c h a r a c t e r i z e d in that the upper and the lower tape layers (13a, 14a; 13b, 13b) are comprised of  
20 two separate sheets which are mutually joined along two mutually abutting edges thereof, said edges together forming the common longitudinally extending edge (15, 16) of the tape (13, 14).

25 8. An absorbent article according to any one of Claims 1-3, c h a r a c t e r i z e d in that the longitudinally extending elastic elements (19) are mounted within a fold formed in the liquid-impermeable casing layer (5) in the flexible side-flaps (221, 222).

30 9. An absorbent article according to any one of Claims 1-3, c h a r a c t e r i z e d in that the article includes a separate, flexible liquid-tight outer casing (448) which includes a laminate consisting of an inner  
35 and an outer casing layer (447, 5), of which the outer casing layer is comprised of the liquid-impermeable

layer (5); in that the flexible side-flaps (421, 422) include parts of the liquid-tight outer casing (448); in that the absorbent pad (6) is enclosed between a first and a second casing layer (4, 446), of which the first casing layer is comprised of the liquid-permeable layer (4); and in that at least parts of the surface of the second casing layer (446) are attached to the inner casing layer (447) of the flexible liquid-tight outer casing (448).

10

10. An absorbent article according to Claim 1 or Claim 3, characterized in that the article includes a liquid-permeable casing layer (4) on that side of the absorbent pad (6) which is intended to face the wearer in use, a liquid-impermeable casing layer (5) on the other side of the absorbent pad (6), and two additional, superimposed liquid-permeable casing layers (336, 337); in that at least parts of the surfaces of said additional casing layers (336, 337) are attached to the liquid-permeable casing layer (4) of the absorbent pad; in that the barrier flaps (323, 324) include parts of the two additional casing layers (336, 337); and in that the flexible side-flaps (321, 322) include parts of the two casing layers (4, 5) enclosing the absorbent pad (6).

25

11. An absorbent article as claimed in claim 1 substantially as hereinbefore described with reference to and as illustrated in the accompanying drawings.



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**Patents Act 1977**  
**Examiner's report to the Comptroller under**  
**Section 17 (The Search Report)**

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**Relevant Technical fields**

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(ii) Int Cl (Edition 5 ) A61F 13/15

**Databases (see over)**

(i) UK Patent Office

(ii)

Search Examiner

B J PROCTOR

Date of Search

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Documents considered relevant following a search in respect of claims 1-11

Category (see over)	Identity of document and relevant passages	Relevant to claim(s)
	NONE	

Category	Identity of document and relevant passages	Relevant to claim(s)

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